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EXAMINER	
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The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK A. SCHUBERT
and Jack W. Marple

Appeal 2009-014759
Application 10/682,223
Technology Center 1700

Before TERRY J. OWENS, TONI R. SCHEINER, and MARK NAGUMO, *Administrative Patent Judges*.

NAGUMO, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

A. Introduction[2]

Mark A. Schubert and Jack W. Marple ("Schubert") timely appeal under 35 U.S.C. § 134(a) from the final rejection[3] of claims 1-25, which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6. We REVERSE.

The subject matter on appeal relates to an electrochemical battery cell containing a nonaqueous solvent electrolyte and fitted with an improved pressure-relief seal. According to the 223 Specification, nonaqueous electrolyte cells are being used more frequently in spite of their higher cost due to their high energy density, high capacity at low temperatures, low weight, and long shelf life over a broad range of temperatures. (Spec. 1, ll. 16-20.) Such cells require seals that can withstand a wide range of environmental conditions, including chemical attack by and vaporization of the internal nonaqueous electrolytes. Relief from internal pressure buildup above some set level is said to be important. (*Id.* at 7, ll. 1-4.) Prior art thermoplastic seals are said to be inadequate due to excessive cold flow, which becomes more severe at higher temperatures. (*Id.* at 3, ll. 24-29.) According to the inventors, this problem is overcome by providing a thermoplastic material that contains more than 10 weight percent of a thermal-stabilizing filler, such as glass fibers. (*Id.* at 6, l. 29 to 7, l. 4.)

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[2] Application 10/682,223, *Nonaqueous Cell with Improved Thermoplastic Sealing Member*, filed 9 October 2003. The specification is referred to as the "223 Specification," and is cited as "Spec." The real party in interest is listed as Eveready Battery Co., Inc. (Appeal Brief, filed 23 December 2009 ("Br."), 3.)

[3] Office action mailed 23 September 2008.

Representative Claim 1 reads:

1. An electrochemical battery cell comprising:

a housing comprising a metal container with at least one open end and at least

a first metal cover disposed in the at least one open end of the container;

a positive electrode; a negative electrode; a separator disposed between the positive and negative electrodes; an electrolyte; and

a first *thermoplastic seal member*, comprising

a thermoplastic resin and *more than 10 weight percent of a thermal-stabilizing filler*,

the first thermoplastic seal member sealing an aperture in at least one of the container and the first cover and forming at least a part of a pressure relief vent for releasing pressure from the cell.

(Br., Claims App. 1 [unnumbered pages]; indentation, paragraphing, and emphasis added.)

The Examiner has maintained the following grounds of rejection:[4]

A. Claims 1-15, 18, and 20-22 stand rejected under 35 U.S.C. § 103(a) in view of the combined teachings of Zupancic,[5] Malay,[6] and Doose.[7]

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[4] Examiner's Answer mailed 30 March 2009 ("Ans."). A rejection under § 102(e) in view of a patent to Schubert has been withdrawn. (Ans. 2, ¶ 5.)

[5] Ronald E. Zupancic, *Electrochemical Cell having a Safety Vent Closure*, US Patent 4,592, 970 (1986).

[6] Manuel Rafols Malay and Robert E. Ray, Jr., *Electrochemical Cell with Improved Gasket and Seal*, US Patent 6,468,691 (22 October 2002), based on an application filed 28 February 2000.

[7] Paul R. Doose, *Sintered Polytetrafluoroethylene Composite Material and Seal Assembly*, U.S. Patent 4,580,790 (1986).

B. Claims 16, 17, and 23 stand rejected under 35 U.S.C. § 103(a) in view of the combined teachings of Zupancic, Malay, Doose and Turchan.[8]

C. Claims 19, 24, and 25 stand rejected under 35 U.S.C. § 103(a) in view of the combined teachings of Zupancic, Malay, Doose and Yoshinaka.[9]

B. Discussion

Findings of fact throughout this Opinion are supported by a preponderance of the evidence of record.

Schubert argues that Doose, on which the Examiner relies for teachings regarding a thermoplastic containing more than 10 weight percent of a thermal stabilizing filler, is concerned with bearings for reciprocating or rotating surfaces and as bearing pads for large structures. Accordingly, in Schubert's view, Doose provides no teaching that would have suggested the use of that material in an electrochemical cell. (Ans. 11-12.) Moreover, according to Schubert, while Zupancic teaches a pressure-relief seal and liner that comprises a resiliently deformable member, Doose teaches that fillers are added to polytetrafluorethylene ("PTFE") in order to "prevent the PTFE from becoming deformed during continued use." (*Id.* at 12, quoting Doose, col. 1, ll. 37-39; emphasis omitted.) Finally, Schubert argues that the Examiner has not established that the teachings of Malay regarding a shaped sealing gasket, which may be made from polymers such as PTFE filled with

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[8] Michael J. Turchan et al., *Cell with Safe Venting Electrolyte*, (U.S. Patent 4,482,613 (1984).

[9] Minoru Yoshinaka et al., *Conductive Resin Composition Containing Zinc Oxide Whiskers having a Tetrapod Structure*, US Patent 5,183,594 (1993).

glass, are relevant to the pressure-relief seal described by Zupancic. (Reply[10] 3.)

The Examiner maintains that the disclosure by Doose that PTFE containing 15% to 25% E-glass is capable of withstanding pressure forces of 2800 psi would have provided the motivation to use such a material in the sealing gaskets taught by Malay to withstand such pressures in an electrochemical cell, and "to withstand electrolyte creepage and reducing corrosion of the electrochemical cell as disclosed by the Zupancic reference." (Ans. 5; 9.) The Examiner argues further that the decreased tensile strength of filled PTFE relative to pure PTFE is evidence that PTFE filled with E-glass is more deformable than PTFE, and hence more suitable than PTFE for use in the safety non-resealable vent closures taught by Zupancic. (*Id.* at 14.)

A classical instance of obviousness is the substitution of a second material for a first material in view of a prior teaching that the properties of the second material are such that a person having ordinary skill in the art would have had a reasonable expectation that the substitution would yield a successful embodiment. The issue in the present case is whether Schubert has shown, by a preponderance of the evidence, that the Examiner has failed to establish such a reasonable expectation of successfully substituting the filled PTFE materials taught by Doose to be useful as bushings, sliding bearings, or bearings for bridges or buildings, for the resiliently deformable liners described by Zupancic as components of a pressure relief vent closure.

[10] Reply Brief ("Reply") filed 1 June 2009.

As Schubert points out, Doose teaches that the "filler materials are designed to prevent the PTFE from becoming deformed during continued use." This disclosure is, on its face, contrary to Zupancic's requirement that liners for the vent closures are preferably "resiliently deformable" (Zupancic, col. 3, ll. 57-58). The Examiner's response, that "deformable" is a relative term, and the Examiner's argument that tensile strength correlates directly with deformability, and that the filled PTFEs are "[t]herefore, by Zupancic's standards . . . more deformable than PTFE" (Ans. 14), are noted. The Examiner has not, however, explained what teachings in the prior art show that the glass fillers that Doose characterizes as "preventing the PTFE from becoming deformed during continued use" would have been expected to provide a filled PTFE that is "resiliently deformable" under the conditions required by Zupancic for the safety vent closures in electrochemical cells. Nor has the Examiner directed our attention to any credible evidence that Zupancic seeks lower tensile strength materials. Finally, as Schubert argues, Malay is concerned solely with static seals for electrochemical cells that contain nonaqueous electrolytes. The Examiner has not established the relevance of such teachings to the safety vents described by Zupancic.

On the present record, we conclude that the Examiner has failed to come forward with sufficient evidence in support of the arguments for the prior-art recognized suitability of glass-filled PTFEs as substitutes for the unfilled PTFE's described by Zupancic. Accordingly, we REVERSE the rejections of record.

C. Order

We REVERSE the rejection of claims 1-15, 18, and 20-22 under 35 U.S.C. § 103(a) in view of the combined teachings of Zupancic, Malay, and Doose.

We REVERSE the rejection of claims 16, 17, and 23 under 35 U.S.C. § 103(a) in view of the combined teachings of Zupancic, Malay, Doose, and Turchan.

We REVERSE the rejection of claims 19, 24, and 25 under 35 U.S.C. § 103(a) in view of the combined teachings of Zupancic, Malay, Doose, and Yoshinaka.

REVERSED

sld

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